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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,905	01/21/2004	John N. Feder	D0297 NP	4411

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EXAMINER	
SAIDHA, TEKCHAND	
ART UNIT	**PAPER NUMBER**
1652	

DATE MAILED: 08/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/761,905	FEDER ET AL.	
	Examiner	Art Unit	
	Tekchand Saidha	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) *4-6 and 9-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7 and 8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/30/06, 2.15.05*, 7/22/04 & 7/2/04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. ***Election***

Applicant's election of Group I (claims 1-3 & 7-8), filed 14 July 2006, is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. **Claims withdrawn**:

Claims 4-6 & 9-16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

3. Claims 1-3 & 7-8 are under consideration in this examination.

4. ***Priority***

Applicant's claim for domestic priority under 35 U.S.C. 119(e), filed 21 January 2003, is acknowledged.

5. ***Drawings***

Drawings filed on 1.21.2004 are acceptable for examination purposes.

6. ***Abstract***

*This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

*The abstract should be in narrative form and generally limited to a single paragraph within the range of 50 to 150 words [in length since the space provided for the abstract on the computer tape by the printer is limited]. The form and legal phraseology often used in patent claims, such as "means" and "said", should be avoided in the abstract. The abstract should sufficiently describe the disclosure to assist readers in

deciding whether there is a need for consulting the full patent text for details. MPEP 608.01(b).

Line 3 of the abstract recites 'said', which line may be rephrased to delete the legal phraseology. Correction is required.

7. ***Specification***

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

8. ***Claim Objections***

Claim 7 and therefore 8 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 7 depends on non-elected claim 4. Therefore, the dependency of claim 7 needs to be corrected.

9. ***Claim Rejections - 35 USC § 112*** (first paragraph)

(a) ***Deposit Requirement***

Claims 1-3 & 7-8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

It is apparent that the plasmid/microorganism/vector and the ATCC Deposit Nos. PTA-4454 & PTA 4803 is required to practice the claimed invention. As such the plasmid/microorganism/vector and the ATCC Deposit Nos. PTA-4454 & PTA 4803 must be readily

available or obtainable by a repeatable method set forth in the specification, or otherwise readily available to the public. If it is not so obtainable or available, the requirements of 35 U.S.C. 112, first paragraph, may be satisfied by a deposit of the [plasmid/microorganism/vector]. The specification lacks complete deposit information for the deposit of plasmid/microorganism/vector and the ATCC Deposit Nos. PTA-4454 & PTA 4803. If a deposit was made under the terms of the Budapest Treaty, then an affidavit or declaration by Applicants, or a statement by an attorney of record over his or her signature and registration number, stating that the instant invention will be irrevocably and without restriction released to the public upon the issuance of a patent, would satisfy the deposit requirement made herein. If a deposit has not been made under the Budapest Treaty, then in order to certify that the deposit meets the criteria set forth in 37 CFR 1.801-1.809 and MPEP 2402-2411.05, Applicant may provide assurance of compliance by affidavit or declaration, or by a statement by an attorney of record over his or her signature and registration number showing that (a) during pendency of the application, access to the invention will be afforded to the Commissioner upon request, (b) all restrictions upon availability to the public will be irrevocable removed upon granting of the patent, (c) the deposit will be maintained in a public depository for a period of 30 years, or 5 years after the last request or for the enforceable life of the patent, whichever is longer, (d) a test of the viability of the biological material at the time of deposit (see 37 CFR 1.807) and (e) the deposit will be replaced if it should ever become inviable.

Claims 1-3 & 7-8 are rejected under 35 U.S.C. § 112, first paragraph, for the reasons set forth in the objection to the specification.

EFFECTIVE MARCH 23, 1998 : New address for ATCC deposits.
AMERICAN TYPE CULTURE COLLECTION
10801 University Boulevard, Manassas, VA 20110-2209

10. ***Enablement***

Claims 1-3, 7 and 8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated polynucleotide of SEQ ID NO: 1 encoding a monoacylglycerol acyltransferase-3 (MGAT3) of SEQ ID NO: 2, does not reasonably provide enablement for all fragments of undetermined lengths, variants or allelic variants of SEQ ID NO: 1, or polynucleotides that can hybridize under specifically defined stringency conditions (high stringency conditions, for example)to SEQ ID NO: 1. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with the claims. Factors to be considered in determining whether undue experimentation is required, are summarized in In re Wands (858 F2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988))[*Ex parte* Forman [230 USPQ 546 (Bd. Pat. App. & Int. 1986)]. The Wands factors are: (a) the quantity of experimentation necessary, (b) the amount of direction or guidance presented, (c) the presence or absence of working example, (d) the nature of the invention, (e) the state of the prior art, (f) the relative skill of those in the art, (g) the predictability or unpredictability of the art, and (h) the breadth of the claim. The factors most relevant to this rejection are [the scope of the claims, unpredictability in the

art, the amount of direction or guidance presented, and the amount of experimentation necessary].

The claims are drawn to encompass all fragments of undermined lengths, variants or allelic variants of SEQ ID NO: 1, or polynucleotides that can hybridize under specifically defined stringency conditions (high stringency conditions, for example)to SEQ ID NO: 1. The specification, however, only discloses the full length sequence of a polynucleotide of SEQ ID NO: 1 encoding a monoacylglycerol acyltransferase-3 (MGAT3) of SEQ ID NO: 2. There is no disclosure or description of polynucleotide fragments, variants or allelic variants of SEQ ID NO: 1, or polynucleotides that can hybridize under specifically defined stringency conditions.

Despite knowledge in the art for [the production of polynucleotide fragments or variants], the claims encompass enormous numbers of polynucleotides too short to be expected by the skilled artisan to encode a polypeptide of no function or encode the recited enzymatic activity. Thus the claims are directed to specifically encompass enormous numbers of embodiments expected to be inoperative. Since it is not routine in the art to engage in *de novo* experimentation to make short polynucleotides or variants encode an enzymatic activity where the expectation "of success is unpredictable", the skilled artisan would require additional guidance in order to make and use [polynucleotides] in a manner reasonably commensurate with the scope of the claims. Without such guidance, the experimentation left to those skilled in the art is undue.

With regard to claim 1 and therefore the dependent claims claim 2-3, 7 & 8, directed to a polynucleotide sequence that hybridizes to the disclosed sequences, Applicants have not

sufficiently defined the conditions under which the hybridizations are to take place. Nucleic acid hybridization assays are extremely sensitive to the conditions in which they are performed. The buffer composition, pH, temperature, length of time, salt concentrations, quality and source of template nucleic acid, are all variables which determine the reproducibility of a given hybridization experiment. Given the unpredictability of the art and the nature of hybridization experiments in general, it is not sufficient to merely cite hybridization without a clear and explicit recitation of the conditions associated with the hybridization. For example, the definition of stringency as it pertains to hybridization conditions is subject to interpretation and is different from laboratory to laboratory. Therefore, without a clear and explicit recitation of the conditions which were actually used by Applicants in isolating the claimed polynucleotides which hybridize to the disclosed sequences, the skilled artisan would not be able to practice the claimed invention and would not be reasonably apprised of the metes and bounds of the claimed invention. Without such guidance, the experimentation left to those skilled in the art is undue. Including in the claims the exact nature of the hybridization conditions used to isolate the claimed polynucleotides would aid in overcoming this portion of the rejection.

11. Claims 1-3, 7 & 8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 is directed to a genus of polynucleotide molecules representing polymorphic form(s) of SEQ ID NO: 1 which encompass allelic variants of SEQ ID NO : 1.

An allelic or polymorphic sequence as an alternative form

of the gene which may result in at least one mutation in the nucleic acid sequence. Alleles may result in altered mRNAs or polypeptides whose structure or function may or may not be altered. This definition does not provide any specific information about the structure of naturally occurring alleles or polymorphs or variants of SEQ ID NO: 1 (i.e. where is the likely regions within which mutations are likely to occur) nor discloses any function for naturally occurring polymorphs. There is no description of the mutational sites that exist in nature, and there is not description of how the structure of SEQ ID NO: 1 relates to the structure of any naturally occurring polymorphs. The general knowledge in the art concerning alleles dose not provide any indication of how one polymorph is representative of unknown polymorphs. The nature of polymorphism is such that they are variant structures, and in the present state of the art structure of one does not provide guidance to the structure of others. Therefore, many functionally unrelated polypeptides are encompassed within the scope of these claims. The specification discloses specific species of the claimed genus (i.e. the sequence by SEQ ID NO: 1) which is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genus. Therefore, one skilled in the art cannot reasonably conclude that the applicant had possession of the claimed invention at the time the instant application was filed.

12. Claims 1-3, 7 & 8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed

invention. These claims are directed to a genus of polynucleotide molecules with either SEQ ID NO: 1 or DNA having the limitations of encoding a protein, a fragment thereof, a variant thereof, or which can hybridize under undefined condition, which may be stringent or not.

The specification does not contain any disclosure of the function of all the polynucleotide sequences that are variants or fragments of SEQ ID NO: 1. The genus of polynucleotides that comprise these molecules is a large variable genus with the potentiality of encoding many different proteins. Therefore, many functionally unrelated polynucleotide are encompassed within the scope of these claims, including partial DNA sequences. The specification discloses only a single species of the claimed genus which is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genus. Therefore, one skilled in the art cannot reasonably conclude that the applicant had possession of the claimed invention at the time the instant application was filed.

Applicant is referred to the revised interim guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov <http://www.uspto.gov>.

12. Claims 3 & 7 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated host cell transformed with the synthetic nucleic acid, does not reasonably provide enablement for host cells within a multicellular organism that have been transformed with the synthetic nucleic acid. The specification does not enable

any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Claims 3 & 7 are so broad as to encompass host cells transformed with specific nucleic acids, including cells in *in vitro* culture as well as cells within any multicellular organism. The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of host cells broadly encompassed by the claims. While methods for transforming cells *in vitro* are well known in the art, methods for successfully transforming cells within complex multicellular organisms are not routine and are highly unpredictable. Furthermore, methods for producing a successfully transformed cell within one multicellular organism are unlikely to be applicable to transformation of other types of multicellular organisms as multicellular organisms vary widely. However, in this case the disclosure is limited to only host cells *in vitro*. Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including the use of host cells within a multicellular organism for the production of polypeptide. The scope of the claims must bear a reasonable correlation with the

scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, expression of genes in a particular host cell and having the desired biological characteristics is unpredictable the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). It is suggested that applicants limit the claims to "An isolated host cell …".

13. ***Claim Rejections - 35 USC § 112*** (second paragraph)

Claims 1-3, 7 & 8 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 9 & 10, recite the phrase 'encoding a polypeptide domain of SEQ ID NO: 2'; or line 12, recite the phrase 'encoding a polypeptide epitope'. It is not clear what these polypeptide domains or epitopes are. Clarification is requested as none is defined by the instant specification. Barring any clear definition of what these 'domain' or 'epitopes' are, it is perhaps appropriate to suggest deletion of these phrases.

Also Claim 1, recites the phrase 'which is hybridizable to …'. The claim is indefinite because of lack of appropriate use. Correction to recite 'which hybridizes to..' is suggested to overcome this part of the rejection. However, this language may come in the way of the 'art rejections'. See the art rejections applied in the later part of this Office Action.

Claim 1, recites the abbreviation 'MGAT'. The first use of an uncommon abbreviation must be spelt out.

Claims 2-3, 7 & 8 are included in the rejection for failing to correct the defect present in the base claim(s).

14. ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-3, 7 & 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Lardizabal et al. (USP 6,822,141).

Applicants' claims are broadly drawn to any polynucleotide fragment of SEQ ID NO: 1 or a sequence that can hybridize to such a fragment, vector and host cell comprising the fragment and a method of making the protein using the polynucleotide fragment. There is no limitation present in the claims which would restrict the size of the claimed polynucleotide fragments or complementary sequences. Di- and tri- nucleotides are well known in the art of molecular biology and chemistry and are encompassed by the scope of these claims.

Lardizabal et al. teach a polynucleotide of SEQ ID NO: 53, encoding a diacylglycerol acyltranferase, wherein the polynucleotide is 29.8% identical to Applicants' SEQ ID NO: 1

(*See* the enclosed sequence search alignment between Applicants' SEQ ID NO: 1 and SEQ ID NO: 53 of the reference, **I**). Suitable vectors, host cell and a method of making the protein recombinantly are also described. *See* for example, claims and the entire document. The reference teaching all the limitations of the claims is therefore anticipatory.

15. Claims 1-3, 7 & 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Attersand et al. (USP 6,835,556).

The subject of what the claims are drawn to is described in paragraph 14.

Attersand et al. teach protein cluster V polynucleotide and the protein cluster is described to have acyl CoA:diacylglycerol acyltransferase activity (*see* paragraph 11 of the patent). Attersand's polynucleotide encoding acyl CoA:diacylglycerol acyltransferase (SEQ ID NO: 1) is about 36% identical to Applicants' SEQ ID NO: 1. The reference also teaches vectors, host cells and method of making the protein recombinantly, and anticipates the claims for the similar reasons discussed in paragraph 14. (*See* the enclosed sequence search alignment between Applicants' SEQ ID NO: 1 and SEQ ID NO: 1 of the reference, **II**).

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United

States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 7 & 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Gimeno et al. [US 20030170691 A1]. Gimeno et al. teach a polynucleotide sequence (SEQ ID NO: 7) which is about 87% identical to Applicants' SEQ ID NO: 1 and encodes a human diacylglycerol acyltransferase 2 (DGAT2). Gimeno's SEQ ID NO: 8, which is DGAT2 (protein), is **100%** identical to Applicants' protein of SEQ ID NO: 2, having MGAT activity. Gimeno et al. also teach vector, host cell and recombinant method of making the protein. Gimeno et al. teaching all the claim limitations is therefore anticipatory. (*See* the enclosed sequence search alignment between Applicants' SEQ ID NO: 1 & 2 and SEQ ID NO: 7 & 8, respectively, of the reference, **III & IV**).

17. No claim is allowed.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tekchand Saidha whose telephone number is (571) 272 0940. The examiner can normally be reached on 8.30 am - 5.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on (571) 272 0928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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